15th European Turbulence Conference 2015
August 25-28th, 2015, Delft, The Netherlands

Scope

Since 1986 the European Turbulence Conference (ETC) is held every other year with usually over 450 participants. The objective of the ETC is to provide a platform for scientists to present and discuss recent advances in the field of turbulence and related topics.

Topics

The principal topics of the ETC vary from fundamental physical issues to applied fluid mechanics. This includes, but is not limited to:

- wall-bounded and boundary-free turbulent flows
- pipe flow
- jets and wakes
- Taylor-Couette flow
- atmospheric turbulence
- geo and astrophysical turbulence
- 2D turbulence, rotational flows
- stratified flows, convection
- wave turbulence
- non-Newtonian flows
- compressible flows
- acoustics
- MHD
- turbulent multiphase flows
- reacting flows
- scalar transport and mixing
- intermittency and scaling
- vortex dynamics and structure formation
- Lagrangian statistics
- instability
- transition and control

EUROPEAN MECHANICS SOCIETY

Preface

Dear Colleague,

It is a great pleasure for us to host the European Turbulence Conference again at the premises of the Delft University of Technology. The 4th European Turbulence Conference was organized at the same location in 1992. The Delft University of Technology has a long history in turbulence research, starting with the work of J.M. Burgers in the early 20th century.

More than 500 abstracts have been submitted to the conference, by researchers from all over the world. Each abstract has been reviewed by three members of the scientific committee and more than 430 papers were selected for oral presentation at the conference. Combined with eight well-known invited speakers this will guarantee a very interesting and lively conference that will cover a broad range of current topics in turbulence research. More than 50% of the participants are younger than 35 years (and thus eligible for the Euromech Young Scientist prize). The relatively low average age of the participants is a good indication for the viability of the turbulence research worldwide.

Besides the scientific program, we have organized two social events: a welcome reception on Tuesday, August 25th and the conference diner in the historic Old Church (dating back to 1246) in the city center on Wednesday, August 26th. Since the time of the conference is also the start of the academic year, the main building of the university (Aula) will be shared with the newly arriving first year students. This will guarantee a lively university atmosphere and we hope that you will enjoy a very fruitful and enjoyable conference stay in Delft.

The local organizing committee,

Prof. B.J. Boersma
Dr W.P. Breugem
Dr. G.E. Elsinga
Dr. R. Pecnik
Dr. C. Poelma
Prof. J. Westerweel

Welcome to ETC15!

On behalf of the Euromech Committee for the Euromech European Turbulence Conference I welcome you to the 15th European Turbulence Conference. With this conference we return to Delft, where ETC4 already took place in 1992. We are thankful to the Technical University of Delft and Bendiks Jan Boersma and his team to host this event and for all their hard work in preparation of the conference. Over the years the Euromech European Turbulence Conference has grown to the most visible and prominent place to present results and developments in the research on turbulence, next to the Meetings of the Division of Fluid Dynamics of the American Physical Society. We are happy to welcome over 400 participants from more than 18 countries all over the world, and are looking forward to the 430 oral presentations and of course the 8 keynote lectures.

We wish you a stimulating, fruitful, and productive conference, with lots of scientific exchange with your colleagues from all over the world.

Detlef Lohse
Chairman of the Euromech Committee for the European Turbulence Conference

Committees

Scientific steering committee
Prof. D. Lohse (chair), University of Twente, The Netherlands
Prof. E. Bodenschatz, Max Planck Institute, Germany
Prof. B.J. Boersma (local organizer), TU Delft, The Netherlands
Prof. C. Casciola, Università di Roma La Sapienza, Italy
Prof. S. Fauve, École Normale Supérieure, France
Prof. D. Henningson, KTH, Stockholm
Prof. R. Kerswell, University of Bristol, UK
Prof. S. Malinowski, University of Warsaw, Poland
Prof. J.F. Pinton, École Normale Supérieure, France
Prof. N. Sandham, University of Southampton, UK

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Prof. J. Westerweel

Process & Energy department
Faculty of Mechanical, Maritime and Materials Engineering
Delft University of Technology, The Netherlands

Acknowledgments
The local organizing committee acknowledges Caroline Legierse, Eveline van der Veer and Nancy Kouters for their support.

Sponsors and exhibitors

The organizing committee acknowledges the (financial) support from the following organisations, sponsors and exhibitors: European Mechanics Society (EUROMECH), LaVision, Dantec Dynamics, Cambridge University Press, Springer, the J.M. Burgerscentrum and TU Delft.

Program at glance

Monday, August 24th

17:00 - 19:00   **Registration**   (3mE / Mech. Eng.)

Tuesday, August 25th

08:00 - 09:00   **Registration**   (Auditorium TU Delft)
08:45 - 09:00   **Opening, prof. D. Lohse**   (Auditorium TU Delft)
09:00 - 10:00   **Invited lecture, Prof L. Smits**   (Auditorium TU Delft)
10:00 - 10:30   Coffee Break
10:30 - 12:30   **Parallel sessions**   (3ME)
12:30 - 13:30   Lunch
13:30 - 14:30   **Invited lecture, Prof. A. Mazzino**   (Auditorium TU Delft)
14:30 - 15:00   Coffee Break
15:00 - 17:00   **Parallel sessions**   (3ME)
17:30 - 18:30   Welcome reception   (Lijm & Cultuur)

Wednesday, August 26th

9:00 - 10:00   **Invited lecture, Prof. S. Tobias**   (Auditorium TU Delft)
10:00 - 10:30   Coffee Break
10:30 - 12:30   **Parallel sessions**   (3ME)
12:30 - 13:30   Lunch
13:30 - 15:30   **Parallel sessions**   (3ME)
15:30 - 16:00   Coffee Break
16:00 - 17:00   **Invited lecture, Prof. C. Sun**   (Auditorium TU Delft)
19:00 - 22:00   Conference Dinner   (Oude Kerk, "Old Church")

Thursday, August 27th

9:00 - 10:00   **Invited lecture, Prof. P.G. Frick**   (Auditorium TU Delft)
10:00 - 10:30   Coffee Break
10:30 - 12:30   **Parallel sessions**   (3ME)
12:30 - 13:30   Lunch
13:30 - 14:30   **Invited lecture, Prof. B. Frohnapfel**   (Auditiorium TU Delft)
14:30 - 15:00   Coffee Break
15:00 - 17:00   **Parallel sessions**   (3ME)

Friday, August 28th

9:00 - 10:00   **Invited lecture, Prof. M. Brachet**   (Auditorium TU Delft)
10:00 - 10:30   Coffee Break
10:30 - 12:30   **Parallel sessions**   (3ME)
12:30 - 13:30   Lunch
13:30 - 14:15   **Invited lecture, Prof. B. Mehlig**   (Auditiorium TU Delft)
14:15 - 14:30   **Closing and Young Scientist Award**   (Auditiorium TU Delft)

Detailed Program

The program, including abstracts, is also available on www.etc15.nl

Keynote lectures

Prof. Lex Smits
Mechanical and Aerospace Engineering
Princeton University, USA

"Spectral Scaling in very high Reynolds Number Wall-Bounded Flows"

We present measurements of one-dimensional spectra in pipe and boundary layer flows at Reynolds numbers up to $Re_\tau = 72500$. The results indicate that in the inertial region the spectra follow closely a $k^{-3/2}$ dependence rather than the expected $k^{-5/3}$. In the energy-containing range, an approximate region of k^{-1} variation is seen to emerge at very high Reynolds numbers, connected with the appearance of the log-law for the streamwise turbulence intensity, but it is not an overlap region in the sense of Perry, Henbest and Chong (*J Fluid Mech* 165, 1986). The location of the outer spectral peak displays only a weak dependence on Reynolds number. The k_x^{-1} region seems to occur when there is sufficient scale separation between the locations of the outer spectral peak and the outer edge of the log region. The extent of k_x^{-1} region depends on the wavelength of the outer spectral peak, which appears to emerge as a new length scale for the log region.

Prof. Andrea Mazzino
Dipartimento di Fisica
University of Genova, Italy

"Rayleigh-Taylor Turbulence: Theoretical Modeling and Numerical Simulations"

Rayleigh–Taylor (RT) turbulence in different situations (Newtonian and non-Newtonian) is analyzed in terms of numerical simulations we carried out in the last decade after the seminal paper by Chertkov (*Phys. Rev. Lett.*, 91:115001, 2003). Our focus will be both on theoretical aspects, mainly related to the issue of *universality* and *anomalous scaling* of relevant statistical observables, and on possible ways to passively control the growth of the (turbulent) mixing layer and its mixing efficiency. Finally, the role of rotation on the statistical structure of the mixing layer will be also discussed in relation to recent numerical simulations.

Day 1: Tuesday 25 August Morning (1)

08:45	**Welcome and opening by Prof. Detlef Lohse**			
09:00	**Invited lecture by Prof. A.J. Smits, "Spectral scaling in very high Reynolds number wall-bounded flows"**			
	Chair: Detlef Lohse			
10:00	**Coffee break**			
	Room A	**Room B**	**Room C**	**Room D**
	Vortex Dynamics 1	**Instability and Transition 1**	**Atmospheric turbulence 1**	**Control 1**
	Chair: Helge Andersson	*Chair: Dan Henningson*	*Chair: Szymon Malinowski*	*Chair: Blair Perot*
10:30	Revisiting the paradigm of predominant vortex stretching and related *Arkady Tsinober*	A new scenario of turbulence theory and an application to pipe turbulence *Tsutomu Kambe*	Experiments with micro-machined multi-array hot-film probe towards field experiments with sub-Kolmogorov resolution *Youry Borisenkov, Grigori Gulitski, Michael Kholmyansky, Slava Krylov, A. Liberzon, A. Tsinober*	Experimental investigation of turbulent boundary layer flow undergoing spanwise traveling transversal surface waves *Dorothee Roggenkamp, Wenfeng Li, Wilhelm Jessen, Michael Klaas, Wolfgang Schröder*
10:45	Large scale organization of near wall turbulent boundary layer *Raoul Dekou, Michel Stanislas, Jean-Marc Foucaut*	Effects of initial conditions and Mach number in the evolution of Richtmyer-Meshkov instabilities *Brandon Wilson, Ricardo Mejia-Alvarez, Kathy Prestridge*	Self-similar regimes in Unstably Stratified Homogeneous Turbulence *Alan Burlot, Benoit-Joseph Grea, Jerome Griffond, Olivier Soulard*	Tuning Transitions in Rotating Rayleigh-Bénard Turbulence *Pranav Joshi Joshi, Rudie Kunnen, Herman Clercx*
11:00	Skin-friction field in turbulent convection *Anastasiya Kolchynska, Vinodh Bandaru, Janet Scheel, Jörg Schumacher*	New exact coherent states in channel flow *Darren WALL, Masato NAGATA*	Shear Capacity as prognostic of nocturnal boundary layer regimes *Ivo van Hooijdonk, Judith Donda, Fred Bosveld, Arnold Moene, Herman Clercx, Bas van de Wiel*	Turbulence statistics of turbulent boundary layer flow following injection of drag-reducing surfactant solution *Shinji Tamano, Jun Ito, Hiroki Uchikawa, Yohei Morinishi*
11:15	Vortex Dynamics in The Transitional and Turbulent Wake of 6:1 Prolate Spheroid at 45-deg incidence angle *Fengjian Jiang, José P. Gallardo, Helge I. Andersson*	Acoustic radiation due to scattering of T-S wave by the mean-flow distortion induced by steady local suction *Ming Dong, Xuesong Wu*	Bringing clouds into our lab! - the influence of turbulence on early stage rain droplets *Mehmet Altug Yavuz, Rudie Kunnen, GertJan van Heijst, Herman Clercx*	Effect of linear feedback control on the optimal transient growth in particle-laden channel flow *Yang Song, Chun xiao Xu, Wei xi Huang*
11:30	Tomographic particle-image velocimetry measurements in a turbulent wavy channel flow *Alexander Rubbert, Wolfgang Schröder, Michael Klaas*	Emergence of oblique TS mode due to longitudinal wall oscillation in 2D channel flow *Takashi Atobe*	Stably stratified shear-produced turbulence and large-scalewaves in a lid driven cavity *Nimrod Cohen, Alexander Eidelman, Tov Elperin, Nathan Kleeorin, Igor Rogachevskii*	Experimental observation of different intermittency types in spherical Couette flow *Dmitry Zhilenko, Olga Krivonosova*
11:45	Large-scale patterns in turbulent Rayleigh-Benard convection in very large aspect ratio cells *Joerg Schumacher, Mohammad Emran*	Turbulent annular pipe flow in subcritical transition regime: effect of radius ratio on structures *Takahiro Ishida, Takahiro Tsukahara*	Scaling analysis based on extremal point topology *Lipo Wang, Yongxiang Huang*	DNS of transition to nonuniform in time and/or space turbulent flows in rotating spherical layers *Dmitry Zhilenko, Olga Krivonosova*
12:00	Assessing late-time singular behaviour in symmetry-plane models of 3D Euler flow *Dan Lucas, Rachel Mulungye, Miguel Bustamante*	Variable density mixing under variable mean pressure gradient *Denis Aslangil, Daniel Livescu, Arindam Banerjee*	A Unified Shell model for Buoyancy-Driven Turbulence *Abhishek Kumar, Mahendra K. Verma*	Turbulent drag reduction using wall jets at flight scale Reynolds number *Faisal Baig, Farhan Khan*
12:15	The spatial origin of -5/3 spectra in grid-generated turbulence *Sylvain Laizet, Jovan Nedic, John Christos Vassilicos*	Dynamics and influence of the buoyancy frequency in unstably stratified homogeneous turbulence *Alan Burlot, Benoit-Joseph Gréa, Fabien Godeferd, Claude Cambon*	Is isotropy restored at small scales in freely decaying strongly stratified turbulence ? *ALEXANDRE DELACHE, Fabien S. Godeferd, Claude Cambon*	
12:30	**Lunch break**			
13:30	**Invited Lecture: Prof. Andrea Mazzino, "Rayleigh-Taylor Turbulence: Theoretical Modeling and Numerical Simulations"**			
	Chair: Jerry Westerweel			
14:30	**Coffee/tea break**			

Day 1: Tuesday 25 August Morning (2)

08:45	**Welcome and opening by Prof. Detlef Lohse**			
09:00	**Invited lecture by Prof. A.J. Smits, "Spectral scaling in very high Reynolds number wall-bounded flows"** **Chair: Detlef Lohse**			
10:00	**Coffee break**			
	Room E	**Room F**	**Room G**	**Room M**
	Jets and Wakes 1 *Chair: Carlo Massimo Casciola*	**Magnetohydrodynamics 1** *Chair: Axel Brandenburg*	**Intermittency and scaling 1** *Chair: Gerrit Elsinga*	**Wall-bounded flows 1** *Chair: Ramis Örlü*
10:30	Three-component velocity measurements in a momentum-conserving, axisymmetric, turbulent jet *F. Gökhan Ergin, Clara Marika Velte*	Turbulent reconnection in astrophysical plasmas and quantum fluids *Yasuhito Narita*	High resolution simulations of random fields and implications on stochastic modelling of turbulence *Rodrigo Pereira, Laurent Chevillard*	Direct numerical simulation of weakly spanwise-rotating turbulent plane Couette flow *Jie Gai, Zhenhua Xia, Qingdong Cai*
10:45	Turbulent wakes of plates with non-equilibrium similarity scalings *Martin Obligado, John Christos Vassilicos*	Magnetic condensate in 2D MHD *Stefano Musacchio*	Small-Scale Properties of Two-Dimensional Rayleigh-Taylor Turbulence *Quan ZHOU*	Wavelet analysis of broadband signals to extract amplitude and frequency modulation: an application to wall turbulence *Woutijn Baars, Krishna Talluru, Nick Hutchins, Ivan Marusic*
11:00	Mean flow generation due to longitudinal librations of side-walls of a rotating annulus *Torsten Seelig, Abouzar Ghasemi V., Michael Kurgansky, Marten Klein, Andreas Will, Uwe Harlander*	Hall effects on scale-hierarchy in MHD turbulence *Hideaki Miura, Tomoharu Hatori, Keisuke Araki*	Log-stable law of energy dissipation rate for turbulence intermittency *Hideaki Mouri*	Spectra of turbulent energy transport in channel flows *Yoshinori Mizuno*
11:15	Triple decomposition of a fluctuating velocity field in a multiscale flow *Pawel Baj, Paul J.K. Bruce, Oliver R.H. Buxton*	Robust energy transfer mechanism via precession resonance in nonlinear turbulent wave systems *Miguel D. Bustamante, Brenda Quinn, Dan Lucas*	The effect of large-scale inhomogeneities on small-scale structure in a turbulent flow *Hamed Sadeghi, Philippe Lavoie, Andrew Pollard*	Numerical investigation of localized exact solutions of the Navier-Stokes equations in pipe flow. *Vladimir Pimanov, Nikolay Nikitin*
11:30	Modulation of fine-scale velocity gradient phenomena by concurrent large-scale velocity fluctuations in a developed shear flow *Oliver Buxton*	On the edge of an inverse cascade *Alexandros Alexakis*	Energy dissipation and flux laws for unsteady turbulence *John Christos Vassilicos, Susumu Goto*	Turbulent structures in an optimal Taylor-Couette flow between two counter-rotating cylinders *Razieh Jalalabadi, Muhammad Nadeem, Hyung Jin Sung*
11:45	Evolution of Coherent Structures in Under-expanded Supersonic Impinging Jets *Paul Stegeman, Julio Soria, Andrew Ooi*	Energy transfers in small-scale and large-scale dynamos *Rohit Kumar, Mahendra K. Verma*	Probing turbulence intermittency via Auto-Regressive Moving-Average models *Davide Faranda, Flavio Pons, Francois Daviaud, Berengere Dubrulle*	Predicting the response of small-scale near-wall turbulence to large-scale outer motions *Lionel Dr. Agostini, Michael Prof. Leschziner*
12:00	Direct numerical simulation of heat transfer of round subsonic impinging jets at high Reynolds number *Robert Wilke, Joern Sesterhenn*	Intermittency in Weak Magnetohydrodynamic Turbulence *Romain Meyrand, Khurom Kiyani, Sébastien Galtier*	Bulk statistics of stable and decaying Taylor-Couette turbulence *Sander Huisman, Ruben Verschoof, Roeland van der Veen, Chao Sun, Detlef Lohse*	Turbulent plane Couette flow with wall-transpiration *Sergio Hoyas, Stefanie V. Kraheberger, Martin Oberlack*
12:15	Relation between enstrophy production and geometry near the turbulent/non-turbulent interface in free shear flows *Tomoaki Watanabe, Carlos da Silva, Yasuhiko Sakai, Kouji Nagata*	Turbulent 2.5D dynamos *Kannabiran Seshasayanan*	Hydrodynamical turbulence by fractal fourier decimation *Alessandra Sabina Lanotte, Luca Biferale, Shiva Kumar Malapaka, Federico Toschi*	
12:30	**Lunch break**			
13:30	**Invited Lecture: Prof. Andrea Mazzino, "Rayleigh-Taylor Turbulence: Theoretical Modeling and Numerical Simulations"** **Chair: Jerry Westerweel**			
14:30	**Coffee/tea break**			

Day 1: Tuesday 25 August Afternoon (1)

	Room A	Room B	Room C	Room D
	Instability and Transition 2 *Chair: Geert Brethouwer*	**Vortex Dynamics 2** *Chair: Bernard Geurts*	**Atmospheric turbulence 2** *Chair: Arkady Tsinober*	**Control 2** *Chair: Rudie Kunnen*
15:00	Taylor-Couette flow with asymmetric end-walls boundary conditions *Torsten Seelig, Kamil Kielczewski, Ewa Tuliszka-Sznitko, Uwe Harlander, Christoph Egbers, Patrick Bontoux*	The role of high vorticity structures in development of Kolmogorov turbulent spectra in inviscid flow *Dmitry Agafontsev, Evgenii Kuznetsov, Alexey Mailybaev*	The maximum sustainable heat flux in stably stratified channel flows *Judith Donda, Ivo Van Hooijdonk, Arnold Moene, GertJan van Heijst, Herman Clercx, Bas van de Wiel*	'Synthetic' Large Scale Motions Organize Small Scale Motions in the Turbulent Boundary Layer *Ian Jacobi, Beverley McKeon*
15:15	Reduced modeling of transitional exact coherent states in shear flow *Cedric Beaume, Greg Chini, Keith Julien, Edgar Knobloch*	The turbulence structure of 3D separation (Stall Cells) over an airfoil *Marinos Manoleosos, Spyros Voutsinas*	Turbulence in mixed-phase clouds *Benjamin Devenish, Kalli Furtado*	Subharmonic lock-in and phase synchronizaton in Karman street due to surface waves *Hans GUNNOO, Nizar ABCHA, Isabel GARCIA-HERMOSA, Alexander Ezersky*
15:30	Nonlinear dynamics of large-scale coherent structures in free shear layers *Xuesong Wu, Xiuling Zhuang*	On the optimal vorticity function of vortex rings *Ionut Danaila, Bartosz Protas*	Entrainment studies in cloud-like flows using novel scanning tomography technique *Kanwar Nain Singh, Sreenivas K.R.*	Modulation of the wall-heat transfer in turbulent thermomagnetic convection by magnetic field gradients *Sasa Kenjeres, Ruben Zinsmeester, Lykasz Pyrda, Elzbieta Fornalik-Wajs, Janusz Szmyd*
15:45	Transition to turbulence in a oblique shock-wave/boundary-layer interaction at M=1.5 *Andrea Sansica, Neil David Sandham, Zhiwei Hu*	Space-time reconstruction of finely resolved velocities of turbulent flows from low resolution measurements *Linh Van Nguyen, Jean-Philippe Laval, Pierre Chainais*	Implicit large-eddy simulation of the stratocumulus-topped boundary layer: a grid sensitivity study *Jesper G. Pedersen, Szymon P. Malinowski, Marta K. Kopeć*	Drag reduction in homogeneous shear flow turbulence diluted with contravariant and covariant polymers *Taketoshi Fujiwara, Kiyosi Horiuti, Shu Suzuki*
16:00	Flow regimes of inertial suspensions of finite size particles *Iman Lashgari, Francecso Picano, Wim-Paul Breugem, Luca Brandt*	Cyclonic vortex in a rotating layer with isolated heat source *Andrei Sukhanovskii, Anna Evgrafova, Elena Popova*	Entrainment and detrainment rates from the piv measurements at the top of laboratory analogs of stratocumulus and cumulus clouds *Anna Gorska, Szymon Piotr Malinowski, Jacob Peter Fugal*	Torque measurements and flowvisualisations in a wide gap taylor-couette flow *Andreas Froitzheim, Sebastian Merbold, Christoph Egbers*
16:15	Effect of drag reducing polymers on the transition of unsteady velocity profiles with reverse flow *Shashank H J, Sreenivas K R*	High-resolution numerical analysis of turbulent flow in straight open ducts with rectangular cross-section *Yoshiyuki Sakai, Markus Uhlmann, Genta Kawahara*	Moist Rayleigh-Benard Convection *Prasanth Prabhakaran, Florian Winkel, Alexei Krekhov, Holger Nobach, Eberhard Bodenschatz*	Drag reduction in a turbulent boundary layer using periodic blowing through one array of streamwise slits *Yinzhe Li, Yu Zhou*
16:30	An Investigation of Transitional Phenomena from Laminar to Turbulent Natural Convection using Compressible Direct Numerical Simulation *ChungGang Li, Tsubokura Makoto*		Turbulent entrainment in a shearless mixing layer at the edge of a cloud *Paul Götzfried, Raymond A. Shaw, Jörg Schumacher*	The influence of steady blowing and roughness on transitional separated boundary layers *Mark Phil Simens, Ayse Gungor*
16:45	A combined experimental and numerical investigation of roughness induced supersonic boundary layer transition *Yunfei Zhao, Wei Liu, Xiaoliang Yang, Shihe Yi, Xiaogang Deng*			Interaction of flexible filaments with the wake of cylinder at low Reynolds numbers *Mohammad Omidyeganeh, Alfredo Pinelli*

Day 1: Tuesday 25 August Afternoon (2)

	Room E	Room F	Room G	Room M
	Jets and Wakes 2	**Magnetohydrodynamics 2**	**Intermittency and scaling 2**	**Wall-bounded flows 2**
	Chair: Bendiks Jan Boersma	*Chair: Yasuhito Narita*	*Chair: Alex Liberzon*	*Chair: Stefan Hickel*
15:00	Experiments and DNS of a round jet with turbulent inlet *Giorgia Sinibaldi, Francesco Battista, Paolo Gualtieri, Luca Marino, Giovanni Paolo Romano, Carlo Massimo Casciola*	Exact two-dimensionalization of low-magnetic-Reynolds-number flows subject to a strong magnetic field *Basile Gallet, Charles R. Doering*	Nonequilibrium and classical dissipation scalings in dns of homogeneous isotropic decaying turbulence *Carlos B. da Silva, Ryo Onishi, Pedro C. Valente*	Experimental characterisation of large scale structures in a high reynolds number turbulent boundary layer *Sricharan Srinath, Christophe Cuvier, Jean-Marc Foucaut, Jean-Philippe Laval*
15:15	Low Reynolds Number Effects on Jets from Round, Square and Elliptical Orifices *Seyed Sobhan Aleyasin, Mark Tachie, Mike Koupriyanov, Tom Epp*	Nonhelical inverse transfer of a decaying turbulent magnetic field *Axel Brandenburg, Tina Kahniashvili, Alexander Tevzadze*	Continuous representation for shell models of turbulence *Alexei A. Mailybaev*	Reconstruction of turbulent pipe-flow profiles from laser Doppler velocimetry data *Denis F. Hinz*
15:30	Direct numerical simulation of the flow around a wing section at moderate Reynolds numbers *Seyed Mohammad Hosseini, Ricardo Vinuesa, Philipp Schlatter, Ardeshir Hanifi, Dan Henningson*	Prandtl number dependence of kinetic-to-magnetic dissipation ratio *Axel Brandenburg*	Markov processes linking stochastic thermodynamics and turbulent cascades *Daniel Nickelsen, Nico Reinke, Joachim Peinke*	Experimental investigation of geometry on torque hysteresis behaviour of Taylor-Couette flow *Melika Gul, Gerrit E. Elsinga, Jerry Westerweel*
15:45	Reynolds number effect on 3D turbulent offset jet reattaching to a free surface *Mohammad Shajid Rahman, Mark Tachie, Baafour Nyantekyi-Kwakye*	Density-variance effects in turbulent magnetic reconnection *Nobumitsu Yokoi*	Temperature fluctuations induced by frictional heating in isotropic turbulence *Robert Chahine, Wouter Bos, Andrey Pushkarev, Robert Rubinstein*	Recent PIV Studies in Fully Developed Pipe Flow at High Reynolds Numbers *Emir Onguner*
16:00	2d-LCA - an alternative to x-wires *Jaroslaw Puczylowski, Joachim Peinke, Michael Hölling*	DNS of natural convection in liquid metal with srtong magnetic field in rectangular box *Wenjun Liu, Dmitry Krasnov, Andre Thess*	Scaling and intermittency in ocean turbulence: analysis of coastal water optical properties and sea surface temperature (SST). *P.R. Renosh, Francois Schmitt, Hubert Loisel*	Turbulent structures in unsteady wall-bounded flow subject to temporal acceleration *Zhixin Wang, Tariq Talha, Yongmann Chung*
16:15	Turbulent entrainment in jets and plumes *Maarten van Reeuwijk, John Craske*	The 2D/3D dynamics of wall-bounded low-Rm magnetohydrodynamic (MHD) turbulence *Nathaniel Baker, Alban Potherat, Laurent Davoust, Francois Debray*	An alternative definition of order dependent dissipation scales *Jonas Boschung, Michael Gauding, Fabian Hennig, Norbert Peters, Heinz Pitsch*	Turbulent separation in lower curved wall channels *Jean-Paul Mollicone, Francesco Battista, Carlo Massimo Casciola*
16:30	Dispersion in unsteady jets and plumes *John Craske, Maarten van Reeuwijk*	Properties of magnetic energy and magnetic helicity cascades in mhd turbulence *Rodion Stepanov, Irina Mizeva, Peter Frick*		Numerical simulation of non-premixed lean methane-air turbulent combustion in a high swirl burner *Javier Martin, Teresa Parra, Francisco Castro*
16:45	Hybrid simulation of wake vortices of landing aircraft in a turbulent environment *Anton Stephan, Frank Holzäpfel, Takashi Misaka*	Reynolds number dependence of the dimensionless dissipation rate in stationary magnetohydrodynamic turbulence *Mairi E. McKay, Moritz F. Linkmann, Arjun Berera, W. David McComb*		Detached coherent structures in channel revisited: comparison with homogeneous shear turbulence *Siwei Dong, Adrián Lozano Durán, Atsushi Sekimoto, Javier Jiménez*

Day 2: Wednesday Aug 26 Morning (1)

09:00	**Invited Lecture: Prof. Steve Tobias, "Direct Statistical Simulation of Turbulent Astrophysical Flows"** **Chair: Szymon Malinowski**			
10:00	**Coffee break**			
	Room A	**Room B**	**Room C**	**Room D**
	Instability and Transition 3 *Chair: Jens Fransson*	**Vortex Dynamics 3** *Chair: Jean-Marc Foucaut*	**Atmospheric turbulence 3** *Chair: Berengere Dubrulle*	**Control 3** *Chair: Leonhard Kleiser*
10:30	chaotic self-sustaining turbulent-laminar interface in two-dimensional channel flow *Toshiki Teramura, Sadayoshi Toh*	Fine scale eddies in turbulent Taylor-Couette flow up to Re = 25 000 *Kosuke Osawa, Yoshitsugu Naka, Naoya Fukushima, Masayasu Shimura, Mamoru Tanahashi*	Large-eddy simulation of a separated flow with a sub-filter scale model based on the integral length-scale *Alexandre Silva Lopes, Ugo Piomelli, José M.L.M. Palma*	Investigation of a flow field generated by a fractal grid based on experimental data and CFD simulations *André Fuchs, Wided Medjroubi, Nico Reinke, Gerd Guelker, Joachim Peinke*
10:45	The growth of turbulent spots in plane Couette flow *Marie Couliou, Romain Monchaux*	A numerical analysis of detailed energy transfers in elastic-wave turbulence *Naoto Yokoyama, Masanori Takaoka*	Large eddy simulations of weakly heated stratocumulus top boudary layer *Marta Kopec, Szymon Malinowski, Zbigniew Piotrowski*	Reynolds number effect on turbulent drag reduction *Davide Gatti, Maurizio Quadrio, Bettina Frohnapfel*
11:00	Stability and exact coherent structures of the asymptotic suction boundary layer with temperature gradient *Stefan Zammert, Bruno Eckhardt*	Spatial structures of energy transfers in elastic wave turbulence *Masanori TAKAOKA, Naoto YOKOYAMA*	Streamwise turbulent intensity under unstable atmospheric stratification explained by a spectral budget *Tirtha Banerjee, Marcelo Chamecki, Gabriel Katul*	Turbulent drag reduction by traveling waves of spanwise forcing *Maurizio Quadrio, Wenxuan Xie*
11:15	Spatially-localized time dependent solutions including turbulence and their interactions in 2D Kolmogorov flow *Yoshiki Hiruta, Toshiki Teramura, Sadayoshi Toh*	Effect of confinement on the decay of vortex ring *Sooraj R, Sameen A*	Measurements of turbulence at stratocumulus top *Szymon P. Malinowski, Imai Jen-La Plante, Katarzyna Karpińska, Herman Gerber, Djamal Khelif*	Stochastic analysis of the effects of inlet velocity conditions on the evolution of spatially evolving mixing layers *Marcello Meldi, Maria Vittoria Salvetti, Pierre Sagaut*
11:30	Mean field model for turbulence transition in plane Poiseuille flow *Bruno Eckhardt, Michael Rath, Marina Pausch*	Scale interaction in a mixing layer. The role of the large-scale gradients. *Daniele Fiscaletti, Antonio Attili, Fabrizio Bisetti, Gerrit Elsinga*	In-cloud Measurements of Drop Dynamics *Jan Molacek, Haitao Xu, Steffen Risius, Eberhard Bodenschatz*	Experimental study of surface modification in a fully turbulent Taylor-Couette flow *Arnoud Greidanus, Rene Delfos, Sedat Tokgoz, Jerry Westerweel*
11:45	On the role of the helicity in the energy transfer in three-dimensional turbulence *Ganapati Sahoo, Luca Biferale*	Measurements of small radius ratio turbulent Taylor-Couette flow *Roeland van der Veen, Sander Huisman, Sebastian Merbold, Chao Sun, Uwe Harlander, Chirstoph Egbers, Detlef Lohse*	Convective Ripening and Rainfall *Michael Wilkinson*	Massive turbulent separation: an investigation of shear-layer interfaces. *Francesco Stella, Nicolas Mazellier, Azeddine Kourta*
12:00	Experimental investigation of Taylor-Couette flow with radius ratio 0.1 to 0.3 *Sebastian Merbold, Andreas Froitzheim, Christoph Egbers*	Predicting growth rates of interfaces and internal layers in a turbulent boundary layer using a first order jump model *Jerke Eisma, Jerry Westerweel, Gerrit E. Elsinga*	Energy transfer in rotating stratified turbulent flows *Raffaele Marino, Annick Pouquet, Duane Rosenberg, Pablo Mininni*	Turbulent skin-friction drag reduction by travelling waves induced by spanwise Lorentz force *Qiang Yang, Yongmann Chung*
12:15	Boundary-layer-flow instability in a rapidly rotating and strong precessing sphere *Shigeo Kida*		Exploitation of homogeneous isotropic turbulence models for optimization of turbulence remote sensing *Albert Oude Nijhuis, Oleg Krasnov, Christine Unal, Herman Russchenberg, Alexander Yarovoy*	On the base pressure of 3D turbulent bluff body wakes with sharp separation *Antoine Evrard, Olivier Cadot, Vincent Herbert, Denis Ricot, Remi Vigneron, Tony Ruiz, Fabien Harambat*
12:30	**Lunch break**			

Day 2: Wednesday Aug 26 Morning (2)

	Room E	Room F	Room G	Room M
09:00	Invited Lecture: Prof. Steve Tobias, "Direct Statistical Simulation of Turbulent Astrophysical Flows" Chair: Szymon Malinowski			
10:00	Coffee break			
	Superfluids 1 *Chair: Mickael Bourgoin*	**Lagrangian aspects of turbulence 1** *Chair: Gregory Falkovich*	**Intermittency and scaling 3** *Chair: Carlos da Silva*	**Wall-bounded flows 3** *Chair: Alexander Smits*
10:30	Spectral properties of Andreev reflection from quantum turbulence in 3He-B. What do they tell about turbulent fluctuations? *Yuri A. Sergeev, Carlo F. Barenghi, Viktor Tsepelin, Andrew W. Baggaley, Shaun N. Fisher, George R. Pickett*	Settling of particles in homogeneous shear turbulence *Michel van Hinsberg, Herman Clercx, Federico Toschi*	Influence of internal intermittency on drop breakage and coalescence in turbulent liquid-liquid dispersion *Wioletta Podgorska*	A new scaling for adverse pressure gradient turbulent boundary layers *Flint Thomas, David Schatzman*
10:45	Motion of quantum vortex lines near realistic rough boundaries *George Stagg, Nick Parker, Carlo F. Barenghi*	Velocity-Gradient Probability Distribution Functions in a Lagrangian Model of Turbulence *Luca Moriconi, Rodrigo M. Pereira, Leonardo S. Grigorio*	Intermittency in elastic wave turbulence *Sergio Chibbaro, Christophe Josserand*	Combined effects of pressure gradient and buoyancy in the boundary layer of a turbulent convection flow *Mikhail Ovsyannikov, Dmitry Krasnov, Mohammad Emran, Jörg Schumacher*
11:00	Particle trajectories in thermal counterflow of superfluid helium *Marco La Mantia, Ladislav Skrbek*	Non-Gaussianity in turbulent pair dispersion *Benjamin Devenish, David Thomson*	Stochastic simulation of non-stationary continuous multifractal time series *Francois G Schmitt, Yongxiang Huang*	Relation of skewness factor and convection velocity in turbulent boundary layer *Artur Drozdz, Witold Elsner*
11:15	Liquid Helium flows around an oscillating cylinder *Daniel Duda, Patrik Svancara, Marco La Mantia, Miloš Rotter, Ladislav Skrbek*	Dynamics of finite-sized light spheres in turbulence *Varghese Mathai, Vivek Prakash, Jon Brons, Chao Sun, Detlef Lohse*	Markov closure for the Lundgren-Monin-Novikov hierarchy of velocity increments in Burgers turbulence *Jan Friedrich, Rainer Grauer*	Characteristic distribution and scale interaction of turbulence in a boundary layer *Patrick Bechlars, Richard D. Sandberg*
11:30	Dissipation of Quasiclassical Turbulence in Superfluid 4He *Andrei Golov, Dmitry Zmeev, Paul Walmsley, Peter McClintock, William Vinen*	Pair dispersion statistics and coherent structures *Manu Goudar, Gerrit Elsinga*	Real-space Manifestations of Bottlenecks in Turbulence Spectra, *Uriel Frisch, Samriddhi Sankar Ray, Ganapati Sahoo, Debarghya Banerjee, Rahul Pandit*	Characteristics of overlap region in high-Reynolds number turbulent channel flow *Yoshinobu Yamamoto, Yoshiyuki Tsuji*
11:45	Mutual-Friction Coefficients in Two-Dimensional Superfluids: From the Gross-Pitaevskii equation to the Hall-Vinen-Bekharevich-Khalatnikov Two-fluid Model *Vishwanath Shukla, Marc Brachet, Anupam Gupta, Rahul Pandit*	Universal Statistical Properties of Inertial-particle Trajectories in Three-dimensional, Homogeneous, Isotropic, Fluid Turbulence *Akshay Bhatnagar, Anupam Gupta, Dhrubaditya Mitra, Prasad Perlekar, Rahul Pandit*	Dissipative Range Scaling of Higher Order Structure Functions for Velocity and Passive Scalars *Michael Gauding, Jonas Boschung, Christian Hasse, Norbert Peters*	Experiments on the interaction between hydrodynamic turbulence and free-surface waves *Timothée Jamin, Michael Berhanu, Eric Falcon*
12:00	Particles and Fields in Superfluids: Insights from the Two-dimensional Gross-Pitaevskii Equation *Rahul Pandit, Vishwanath Shukla, Marc Brachet*			Effect of viscosity and density gradients on turbulent channel flows *Ashish Patel, Jurriaan Peeters, Bendiks Jan Boersma, Rene Pecnik*
12:15				On the instability of flow in a grooved channel *A. Mohammadi, J.M. Floryan*
12:30	Lunch break			

Day 2: Wednesday Aug 26 Afternoon (1)

	Room A	Room B	Room C	Room D
	Instability and Transition 4 *Chair: Javier Jimenez*	**Vortex Dynamics 4** *Chair: Martin Oberlack*	**Atmospheric turbulence 4** *Chair: Jörg Schumacher*	**Control 4** *Chair: Bettina Frohnapfel*
13:30	Direct versus noise-induced optimal transitions for a model shear flow *Marina Pausch, Bruno Eckhardt*	Statistics of Streamline Segments in a Turbulent Channel Flow with a Wavy Wall *Fabian Hennig, Jonas Boschung, Norbert Peters*	A turbulence statistical analysis of simulations of tropical cyclogenesis *Gregory P. King, Galina V. Levina, Michael T. Montgomery*	Turbulent drag reduction by hydrophobic surfaces with shear-dependent slip length *Sohrab Khosh Aghdam, Pierre Ricco, Mehdi Seddighi*
13:45	Stereoscopic PIV measurement in laminar rotating plane Couette flow *Takuya Kawata, P. Henrik Alfredsson*	External and Internal interfacial turbulent shear layers *Julian Hunt, Takashi Ishihara, Jerke Eisma, Wim-Paul Breugen, Jerry Westerweel, Marianna Braza*	Large deviations of planetary jets *Freddy Bouchet, J Brad Marston, Cesare Nardini, Tomas Tangarife*	Identification of Variations of Angle of Attack and Lift Coefficient for a Large Horizontal-Axis Wind Turbine *Abdolrahim Rezaeiha, Maziar Arjomandi, Marios Kotsonis, Martin O.L. Hansen*
14:00	Turbulent bursts and linear instabilities in rotating channel flow *Geert Brethouwer*	Reversibility in the 3d inertial turbulent cascade *Alberto Vela-Martin, Javier Jiménez*	Rapid growth of Coalescing Droplets and Observation of Fine Structures in Turbulent Flow *Ewe-wei Saw, Jeremie Bec, Holger Homann, Samriddhi Sankar Ray, Bérengère DUBRULLE, François Daviaud*	Decay of turbulence at high Reynolds numbers *Michael Sinhuber, Gregory P. Bewley, Eberhard Bodenschatz*
14:15	An Analytical Criterion for Centrifugal Instability in Non-Axisymmetric Vortices *David Nagarathinam, Sameen A, Manikandan Mathur*	Rayleigh number dependence of the Archimedes number dependent large-scale flow structure formation in mixed convection *Max Körner, Christian Resagk, André Thess*	Joint scaling analysis of atmospheric velocity and wind power plant production *Olmo DURAN MEDINA, François G. SCHMITT, Rudy CALIF*	Customized turbulent flow fields *Nico Reinke, Michael Hölling, Joachim Peinke*
14:30	Turbulent bands in a planar shear flow without walls *Matthew Chantry, Laurette S. Tuckerman, Dwight Barkley*	Kraichnan-Leith-Batchelor similarity theory and two-dimensional inverse cascades *B. Helen Burgess, Richard Scott, Theodore Shepherd*	Experimental investigation of effect of high turbulence on the aerodynamics of low re airfoil *Abhishek Bhesania, Ravi Dodamani, Parag J. Deshpande*	Experimental application of a dynamic observer to capture and predict the dynamics of a flat-plate boundary layer *Eliott Varon, Juan Guzman Inigo, Denis Sipp, Peter Schmid, Jean-Luc Aider*
14:45	Influence of Magnetic Diffusion on Short-Wavelength Magnetic Buoyancy Instability *Marek Grądzki, Krzysztof Mizerski*	Invariant solutions in large eddy simulation of homogeneous shear turbulence *Atsushi Sekimoto, Javier Jiménez*	Large and detached eddy simulation of separated flow over 3D hill geometries with surface roughness to mimic flows over complex terrains *RAMESH BALAKRISHNAN*	Shape optimization of the maximizing problem of the dissipation energy and its effect on hydrodynamic stability *Takashi Nakazawa*
15:00	Unstable periodic motion in large eddy simulation of homogeneous, isotropic turbulence *Lennaert van Veen, Yasuda Tatsuya, Susumu Goto, Genta Kawahara*			Direct numerical simulations of drag reduction in turbulent channel flow over bio-inspired herringbone riblet texture *Henk Benschop, J. Westerweel and W.-P. Breugem*
15:15	Differential diffusive instabilities of miscible two-layer stratifications in porous media and hele-shaw cells *Shyam Sunder Gopalakrishnan, Jorge Carballido-Landeira, Anne De Wit, Bernard Knaepen*			
15:30	**15:30 Coffee/tea break**			
16:00	**Invited Lecture: Prof. Chao Sun, "High Reynolds Number Taylor-Couette Turbulence: an Experimental Investigation"** **Chair: Bruno Eckhardt**			

Day 2: Wednesday Aug 26 Afternoon (2)

	Room E	Room F	Room G	Room M
	Superfluids 2 *Chair: Marco La Mantia*	**Reacting and compressible flows 1** *Chair: Stefan Hickel*	**Multiphase and non-Newtonian flows 1** *Chair: Jeanette Hussong*	**Transport and mixing 1** *Chair: J Christos Vassilicos*
13:30	Wave excitations in adjacent vortex filaments *Niklas Hietala, Risto Hänninen, Hayder Salman, Carlo F. Barenghi*	Rayleigh-Taylor-induced turbulent mixing layers *Nicolas Schneider, Serge Gauthier*	Experimental and numerical investigation of turbulent entrainment in dilute polymer solutions *Giacomo Cocconi, Bettina Frohnapfel, Elisabetta De Angelis, Mark Baevsky, Alex Liberzon*	Simultaneous velocity and density measurements in variable density mixing of fully turbulent buoyant gas jets *John Charonko, Kathy Prestridge*
13:45	Three-dimensional structure of quantized vortices in rotating Bose-Einstein condensates *Ionut Danaila, Philippe Parnaudeau, Atsushi Suzuki*	Large-eddy simulation of combustion instability in a back-step flow *Tomoaki Kitano, Ryoichi Kurose, Satoru Komori*	Turbulence modulation in particle laden homogeneous shear flow: Exact Regularized Point Particle method *Paolo Gualtieri, Francesco Battista, Carlo Massimo Casciola*	Direct Numerical Simulations of Turbulent Mixing Layers Between Two Fluids of Large Density Difference *Jon Baltzer, Daniel Livescu*
14:00	Wave turbulence of a rotating array of quantized vortices in the T → 0 temperature limit *Jere Mäkinen, Samuli Autti, Vladimir Eltsov, Petri Heikkinen, Jaakko Hosio, Matti Krusius, Victor L'vov, Paul Walmsley, Vladislav Zavjalov*	Transition and turbulence in a wall bounded channel flow at high mach number *Sahadev Pradhan and Viswanathan Kumaran Sahadev Pradhan and Viswanathan Kumaran*	How the dispersion of a droplet cloud depends on its initial size *Dennis van der Voort, Guus Bertens, Humberto Bocanegra-Evans, Nico Dam, Willem van de Water*	Long-range ordering of turbulent stresses in 2D turbulence *Nicholas Ouellette, Yang Liao*
14:15	Local velocity measurements in the shrek experiment at high reynolds number *C. Baudet, M. Bon Mardion, P. Bonnay, A. Braslau, B. Castaing, F. Chillà, L. Chevillard, F. Daviaud, P. Diribarne, B. Dubrulle, D. Durì, D. Faranda, B. Gallet de Saint-Aurin, M. Gibert, A. Girard, B. Hébral, T. Lehner, I. Moukharski, J-P Moro, J-M Poncet, P-E Roche, B. Rousset, É. Rusaouën, B. Saint-Michel, J. Salort, E-w Saw, K. Steiros, C. Wiertel-Gasquet*	Turbulent transport of chemically reacting gaseous admixtures *Tov Elperin, Nathan Kleeorin, Michael Liberman, Igor Rogachevskii*	Numerical modelling of intermittency region in turbulent stratified air-water flows *Marta Waclawczyk, Tomasz Waclawczyk*	Wall to wall optimal transport *Charles R. Doering*
14:30	Inter-vortex spacing in superfluid turbulence : temperature and Reynolds number dependences *Philippe-E. Roche, Simone Babuin, Emmanuel Lévêque, Emil Varga*	Compressible Rayleigh-Taylor turbulent mixing under different acceleration histories *You-sheng Zhang, Bao-lin Tian, Xin-liang Li*	Flow over partially liquid filled cavity *Andries C. van Eckeveld, Avinash K. Pancham, Jerry Westerweel, Christian Poelma*	Effective and anomalous diffusion of inertial particles in flowing fluids *Marco Martins Afonso, Andrea Mazzino*
14:45	Universal statistics of point vortex turbulence: the doubly-periodic domain *Gavin Esler*	An LIA+EDQNM strategy to study shocked turbulent mixtures *Jerome Griffond, Benoît-Joseph Gréa, Olivier Soulard*	Effects of particle size and solid-to-fluid density ratio on the dynamics of particle-laden homogeneous shear turbulence *Mitsuru Tanaka, Daisuke Teramoto*	Joint investigation of settling and preferential concentration of inertial particles in turbulence *Sholpan Sumbekova, Alberto Aliseda, Alain Cartellier, Romain Volk, Mickael Bourgoin*
15:00	Oscillating grid high reynolds experiments in superfluid *Ndeye Fatimata SY, Mickaël Bourgoin, Pantxo Diribarne, Mathieu Gibert, Bernard Rousset*			Passive scalar mixing of a turbulent jet emitted into homogeneous, isotropic turbulence *Alejandro Perez-Alvarado, Laurent Mydlarski, Susan Gaskin*
15:15				Entrainment temporal evolution across stably and unstably stratified vapor/clear air interfaces *Luca Gallana, Francesca De Santi, Silvio Di Savino, Renzo Richiardone, Michele Iovieno, Daniela Tordella*
15:30	**15:30 Coffee/tea break**			
16:00	**Invited Lecture: Prof. Chao Sun, "High Reynolds Number Taylor-Couette Turbulence: an Experimental Investigation"** **Chair: Bruno Eckhardt**			

	Room A	Room B	Room C	Room D
09:00	Invited Lecture: Prof. Peter G. Frick, "Cascades and Dynamo in Fully Developed MHD Turbulence" Chair: Eberhard Bodenschatz			
10:00	Coffee break			
	Instability and Transition 5 *Chair: Dan Henningson*	**Wall-bounded flows 4** *Chair: Christoph Egbers*	**Geophysical and astrophysical turbulence 1** *Chair: Steve Tobias*	**Multiphase and non-Newtonian flows 2** *Chair: Christoph Bruecker*
10:30	Bypass transition in boundary layers as an activated process *Tobias Kreilos, Taras Khapko, Philipp Schlatter, Yohann Duguet, Dan S Henningson, Bruno Eckhardt*	Generalized diagnostic scaling for high-order moments in turbulent boundary layers *Ramis Orlu, Antonio Segalini, Joseph Klewicki, P. Henrik Alfredsson*	Geostrophic convective turbulence: the effect of boundary layers *Rodolfo Ostilla-Mónico, Erwin van der Poel, Rudie Kunnen, Roberto Verzicco, Detlef Lohse*	Dynamics of inertial disk particles in turbulent channel flow *Niranjan Reddy Challabotla, Lihao Zhao, Helge I. Andersson*
10:45	The time-varying nature of the asymmetrical flow of a shear-thinning polymer solution in transitional pipe flow. *Chaofan Wen, Robert Poole, David Dennis*	Skin-Friction Measurements on Mathematically Generated Roughness in a Turbulent Channel Flow *Julio M. Barros, Michael P. Schultz, Karen A. Flack*	Non local resonances in weak turbulence of gravity-capillary waves *Quentin Aubourg, Nicola Mordant*	Inertial effects on non-spherical particle rotation on turbulent channel flow *Helge I. Andersson, Lihao Zhao, Niranjan R. Challabotla, Evan A. Variano*
11:00	Multimodal instability and onset of the laminar-turbulent transition in a supersonic boundary layer *Dmitry Khotyanovsky, Alexey Kudryavtsev*	Structure and dynamics of turbulent flows over highly permeable walls *Wim-Paul Breugem, Mehdi Niazi Ardekani, Gerrit E. Elsinga*	Direct numerical simulations of turbulent flow through porous channels and ducts *Arghya Samanta, Ricardo Vinuesa, Iman Lashgari, Philipp Schlatter, Luca Brandt*	Contact velocities of small ellipsoids settling in turbulence *Christoph Siewert, Rudie P. J. Kunnen, Wolfgang Schröder*
11:15	On the artificial disturbance evolution in 2D/3D spanwise modulated boundary layers at Mach 2 and 2.5 *Panina Alexandra, Kosinov Alexander, Semionov Nikolay, Yermolaev Yury*	Near Wall PIV-Measurements on the Windward Slope of a Hill *Daniel Quosdorf, Ulrich Schuster, Michael Manhart*	Direct numerical simulations of particle-driven gravity currents in a basin configuration *Luis Espath, Leandro Pinto, Sylvain Laizet, Jorge Silvestrini*	Suppression of turbulent diffusion on the water surface by viscoelastic nano layer *Michael Shats, Nicolas Francois, Hua Xia, Horst Punzmann*
11:30	Fully localised edge states in boundary layers *Taras Khapko, Tobias Kreilos, Philipp Schlatter, Yohann Duguet, Bruno Eckhardt, Dan Henningson*	Direct numerical simulation of turbulent Couette-Poiseuille flow with zero skin friction *Gary N Coleman, Philippe R Spalart*	Inverse cascade in space turbulence during current disruption *Anthony Lui*	Settling of finite-size particles in isotropically forced, homogeneous turbulence: interface-resolved simulations *Agathe Chouippe, Todor Doychev, Markus Uhlmann*
11:45	Transition and wavy walls: an experimental study *Robert Downs, Jens Fransson*	Pressure drop and turbulence statistics in transpired pipe flow *Francisco J. S. Bandeira, Juliana B. R. Loureiro, Atila P. Silva Freire*	DNS of inertial wave attractors in a librating annulus with height-dependent gap width *Marten Klein, Abouzar Ghasemi Varnamkhasti, Torsten Seelig, Ion Dan Borcia, Uwe Harlander, Andreas Will*	Fully Turbulent Mean Velocity Profile for Purely Viscous non-Newtonian Fluids *Hamidrez Anbarlooei, Daniel O.A. Cruz, Atila P. Silva Freire*
12:00	Stability analysis of a compressible turbulent flow over a backward-facing step *Samir Beneddine, Emerick Bodere, Denis Sipp*	Counter-gradient diffusion of Reynolds stress in turbulent Couette flow with forward-facing step *Yohei Morinishi, Daiki Yoshikawa, Shinji Tamano*	Direct and inverse energy cascades in a forced rotating turbulence experiment *Frédéric Moisy, Pierre-Philippe Cortet, Basile Gallet, Antoine Campagne*	Interaction between a large bubble and turbulence *Aurore Loisy, Aurore Naso, Peter Spelt*
12:15	Linear stability of a liquid flow through a poroelastic channel *Arghya Samanta, Shervin Bagheri, Luca Brandt*	Turbulence Modeling for Oscillatory Pipe Flow *Alexander Shapiro, David Greenblatt, Gershon Grossman*		
12:30	Lunch break			
13:30	Invited Lecture: Prof. Bettina Frohnapfel, "Skin Friction Drag Reduction in Turbulent Flows" Chair: Arne Johansson			
14:30	Coffee/tea break			

Day 3: Thursday Aug 27 Morning (2)

	Room E	Room F	Room G	Room M
09:00	Invited Lecture: Prof. Peter G. Frick, "Cascades and Dynamo in Fully Developed MHD Turbulence" **Chair: Eberhard Bodenschatz**			
10:00	Coffee break			
	Large Eddy Simulation 1 *Chair: Elisabetta De Angelis*	**Reacting and compressible flows 2** *Chair: Martin Oberlack*	**Lagrangian aspects of turbulence 2** *Chair: Willem van de Water*	**Thermally driven turbulence 1** *Chair: Enrico Stalio*
10:30	Influence of the tip gap size on the development of the tip-leakage vortex using Large Eddy Simulations *Jean Decaix, Guillaume Balarac, Matthieu Dreyer, Mohamed Farhat, Cécile Münch*	Incorporation of acceleration effects into the one-dimensional-turbulence model, with application to turbulent combustion and shock-turbulence interactions. *Zoltan Jozefik, Alan R. Kerstein, Heiko Schmidt*	Longitudinal and transverse Lagrangian velocity increments *Emmanuel Leveque, Aurore Naso*	Buoyancy-driven turbulent convection in a bundle of vertical heated cylinders *Diego Angeli, Enrico Stalio*
10:45	Truncation of scales by relaxation *Roel Verstappen*	Numerical simulation of Dense Gas Compressible Homogeneous Isotropic Turbulence *Luca Sciacovelli, Paola Cinnella*	Energy exchanges and time asymmetry in 3d turbulent flows *Alain Pumir, Haitao Xu, Rainer Grauer, Eberhard Bodenschatz*	Logarithmic variance profiles and the corresponding f^{-1} spectra of temperature fluctuations in turbulent Rayleigh-Bénard convection *Xiaozhou He, Dennis van Gils, Eberhard Bodenschatz, Guenter Ahlers*
11:00	Non-equilibrium near wall velocity profiles in the flow around a cylinder mounted on a flat plate *Wolfgang Schanderl, Michael Manhart*	Explicit algebraic and differential Reynolds stress model application to homogeneously sheared and compressed turbulence *Igor A. Grigoriev, Stefan Wallin, Geert Brethouwer, Arne V. Johansson*	Clustering of particles driven by salinity gradients in turbulence *Lukas Schmidt, Itzhak Fouxon, Dominik Krug, Markus Holzner*	Large scale circulation in turbulent Rayleigh-Bénard convection *Tomáš Králík, Marco La Mantia, Ladislav Skrbek, Pavel Urban, Věra Musilová*
11:15	Going beyond eddy viscosity: Finding a minimal representation of subgrid-scale stresses in large-eddy simulation *Maurits Silvis, Roel Verstappen*	Shadowgraphy of the end-effects regime produced by clustered rockets *Andres Canchero, Raymundo Rojo, Charles Tinney, Nathan Murray, Joseph Ruf*	Bending dynamics of semi-flexible particles in turbulent flows *Aamir Ali, Emmanuel Lance Christopher VI Plan, Samriddhi Sankar Ray, Dario Vincenzi*	Aspect-ratio dependence of the transition to the ultimate state of turbulent Rayleigh-Bénard convection *Eberhard Bodenschatz, Xiaozhou He, Guenter Ahlers, Dennis Van-Gils*
11:30	Testing the Coupled Wake Boundary Layer model with LES of turbulent flow in widely spaced wind farms *Richard Stevens, Dennice Gayme, Charles Meneveau*	DNS of turbulent mixing layers with variable density *Antonio Almagro, Oscar Flores, Manuel García-Villalba*	Measuring the orientation and rotation rate of 3D printed particles in turbulence *Stefan Kramel, Guy Geyer Marcus, Shima Parsa, Brendan Cole, Rui Ni, Greg Voth*	Direct numerical simulation of turbulent Taylor-Couette flow with grooved walls *Xiaojue Zhu, Rodolfo Ostilla-Monico, Roberto Verzicco, Detlef Lohse*
11:45	Wavenumber-frequency spectra in the logarithmic layer of wall turbulence *Michael Wilczek, Richard J.A.M. Stevens, Charles Meneveau*	Statistics of the subgrid scales after the shock-turbulence interaction *Daniel Livescu, Zhaorui Li*	Influence of small-scale turbulence on spatial distribution of cloud-like particles *Katarzyna Karpinska, Szymon Malinowski*	Roughness-triggered turbulent boundary layers in Rayleigh-Bénard convection *Julien Salort, Olivier Liot, Robert Kaiser, Ronald du Puits, Francesca Chillà*
12:00	The effect of temperature fluctuations on the spread of a buoyant plume *Andrea Bisignano, Benjamin Devenish*	Symmetry analysis in linear compressible hydrodynamic stability theory *Jan-Niklas Hau, Martin Oberlack*	Turbulent super-diffusion as a ballistic cascade *Mickael Bourgoin*	Reynolds numbers near the ultimate state of turbulent Rayleigh-Bénard convection *Guenter Ahlers, Xiaozhou He, Dennis van Gils, Eberhard Bodenschatz*
12:15				Multiple transitions in rotating turbulent Rayleigh-Bénard convection *Stephan Weiss, Ping Wei, Guenter Ahlers*
12:30	Lunch break			
13:30	Invited Lecture: Prof. Bettina Frohnapfel, "Skin Friction Drag Reduction in Turbulent Flows" **Chair: Arne Johansson**			
14:30	Coffee/tea break			

Day 3: Thursday Aug 27 Afternoon (1)

	Room A	Room B	Room C	Room D
	Instability and Transition 6 *Chair: Gregory Bewley*	**Wall-bounded flows 5** *Chair: Arne Johansson*	**Geophysical and astrophysical turbulence 2** *Chair: Frederic Moisy*	**Multiphase and non-Newtonian flows 3** *Chair: Wim-Paul Breugem*
15:00	Nonlinear interactions during early stages of boundary layer transition induced by free-stream turbulence *Dmitry Sboev*	Rayleigh-Bénard convection: local scaling exponent in confined thermal convection *Robert Kaiser, Ronald du Puits*	A statistical mechanics framework for the large-scale structure of a turbulent von Karman flow *Berengere Dubrulle, Simon Thalabard, Brice Saint-Michel, Francois Daviaud, Eric Herbert*	Direct Numerical Simulations of two-phase Taylor-Couette turbulence *Vamsi Spandan, Rodolfo Ostilla-Monico, Roberto Verzicco, Detlef Lohse*
15:15	Neutral stability of the flow in a toroidal pipe *Jacopo Canton, Ramis Orlu, Philipp Schlatter*	Dns of turbulent channel flowwith a flexible square cylinder *Koichi Tsujimoto*	Disentangling inertial waves from eddy turbulence in a forced rotating turbulence experiment *Antoine Campagne, Basile Gallet, Frédéric Moisy, Pierre-Philippe Cortet*	Dynamical properties of preferential concentration and clustering of inertial particles in turbulent flows *Romain Monchaux*
15:30	Boundary layer flow control using the method of spanwise mean velocity gradient *Jens H. M. Fransson*	Comparative assessment of grid-spacing-based filter width formulations for Very Large Eddy Simulation *Anastasia Kondratyuk, Michael Schäfer, Suad Jakirlic*	Normal mode decomposition in direct numerical simulations of rotating-stratified turbulence *Corentin Herbert, Raffaele Marino, Annick Pouquet, Duane Rosenberg*	Multifractal Droplet Dynamics in Two-Dimensional, binary-fluid turbulence *Nairita Pal, Prasad Perlekar, Rahul Pandit*
15:45	Tertiary patterns in inclined layer convection *Priya Subramanian, Werner Pesch, Tobias M Schneider*	The streamwise turbulence intensity in the intermediate layer of high Reynolds turbulent pipe flow *John Christos Vassilicos, Jean-Philippe LAVAL, Jean-Marc FOUCAUT, Michel STANISLAS*	Turbulent stratified shear flow experiments: length scale comparison *Robert Ecke, Philippe Odier*	Unsteady particle accumulation in wall turbulence *Dmitrii Sikovsky*
16:00	On a mechanism of delaying laminar-turbulent transition *Hui Xu, Spencer J Sherwin*	Quasi-steady quasi-homogeneous (QSQH) description of the relationship between large-scale and small-scale motions in near-wall turbulence *Chi Zhang, Sergei Chernyshenko*	Double diffusive convection between two parallel plates with different boundary conditions *Yantao Yang, Erwin P. van der Poel, Rodolfo Ostilla-Monico, Chao Sun, Roberto Verzicco, Siegfried Grossmann, Detlef Lohse*	Particle collision statistics in turbulent flows with kinematic simulation *Maximilian Eggersdorfer, Daniel Meyer*
16:15	Effects of freestream turbulence on crossflow instabiltiy *Areshir Hanifi, Seyed Mohammad Hosseini, Dan Henningson*	Phase diagram of turbulent Taylor-Couette flow *Detlef Lohse, Rodolfo Ostilla-Monico, Erwin van der Poel, Roberto Verzicco, Siegfried Grossmann*	The Göttingen rotating turbulent Rayleigh-Bénard convection facility *Dennis van Gils, Xiaozhou He, Guenter Ahlers, Eberhard Bodenschatz*	Sedimentation of large particles in turbulent environments *Walter Fornari, Francesco Picano, Luca Brandt*
16:30	Hamiltonian formalism for weak turbulence of inertial waves in rotating fluids *Andrey A Gelash, Vladimir E Zakharov*	Skin friction factor and mean velocity profile measured in high-reynolds-number turbulent pipe flow *Noriyuki Furuichi, Yoshiya Terao, Yuki Wada, Yoshiyuki Tsuji*	Similarities between 2D and 3D convection for large Prandtl number *Anando Chatterjee, Ambrish Pandey, Mahendra Verma, Biplab Dutta*	The reorganisation of turbulent pipe flow by a drag-reducing polymer additive *David Dennis, Francesca Sogaro*
16:45	Slow Dynamics in turbulent Helium flows *Javier Burguete, Philippe Roche, Bernard Rousset*	Perturbations evolution and streaks formation in turbulent channel flow. *Nikolay Nikitin*		

Day 3: Thursday Aug 27 Afternoon (2)

	Room E	Room F	Room G	Room M
	Large Eddy Simulation 2 *Chair: Richard Stevens*	**Lagrangian aspects of turbulence 3** *Chair: Markus Holzner*	**15:00 Thermally driven turbulence 2** *Chair: Xiaozhou He*	**15:00 Magnetohydrodynamics 3** *Chair: Alexandros Alexakis*
15:00	Global and local energy dissipation in a turbulent Von Kármán flow *Denis Kuzzay, Davide Faranda, Bérengère Dubrulle*	Investigation of lagrangian coherent structures in a wake-induced boundary layer transition *Guosheng He, Chong Pan, Qi Gao, Lihao Feng, Jinjun Wang*	Thermal boundary layer equation for turbulent Rayleigh-Benard convection *Olga Shishkina, Susanne Horn, Sebastian Wagner, Emily S. C. Ching*	Mean magnetic field generation in ideal fluid *Krzysztof Mizerski*
15:15	Can Reynolds stress transport models be used for large eddy simulation? *J. Blair Perot, Jason Gadebusch*	Angular statistics of lagrangian trajectories *Wouter Bos, Benjamin Kadoch, Kai Schneider*	Local heat flux measurements using a micro-machined integrated probe *Eléonore RUSAOUEN, Bernard CASTAING, Francesca CHILLA, Philippe-Emmanuel ROCHE, Julien SALORT*	The Decay of Wall Bounded MHD Turbulence at Low Rm *Kacper Kornet, Alban Potherat*
15:30	Large-Eddy Simulation of Turbulent Supersonic Cold Flow in Ramp-Cavity Combustor With Injector *Zia Ghiasi, Dongru Li, Jonathan Komperda, Farzad Mashayek, Arnab Chaudhuri, Gustaaf Jacobs*	Direction change of fluid particles in confined two-dimensional turbulence *Benjamin Kadoch, Wouter Bos, Kai Schneider*	Analysis of turbulent Rayleigh-Bénard convection in the compound physical/scale space domain *Riccardo Togni, Andrea Cimarelli, Elisabetta De Angelis*	Turbulent MHD channel flows under streamwise magnetic field *Thomas Boeck, Dmitry Krasnov*
15:45	The influence of subgrid-scale modelling on the performance of a new non-equilibrium wall-model for large-eddy simulation *William Sidebottom, Olivier Cabrit, Ivan Marusic, Charles Meneveau, Andrew Ooi, David Jones*	Excess statistics with applications to turbulence in marine environments *Hans Pecseli, Jan Trulsen*	Turbulent convective heat transfer in an inclined cylinder with liquid sodium *Andrei Mamykin, Andrei Vasiliev, Ruslan Khalilov, Ilya Kolesnichenko, Peter Frick*	Magnetohydrodynamic turbulence in a Hartmann duct flow at finite magnetic Reynolds number *Vinodh Kumar Bandaru, Thomas Boeck, Dmitry Krasnov, Jörg Schumacher*
16:00	Energy flux in isotropic turbulence under large variations of external forcing *Haitao Xu, Fabio Di Lorenzo, Alain Pumir, Eberhard Bodenschatz*	Dynamic of large particles embedded in shear flows *Miguel López-Caballero, Nathanaël Machicoane, Lionel Fiabane, Jean-Françoise Pinton, Mickael Bourgoin, Romain Volk*	Large-Scale Circulation Reversals in a 2D Rayleigh-Bénard cell *Berengere Podvin, Anne Sergent*	Helical mode interactions and spectral energy transfer in magnetohydrodynamic turbulence *Moritz F. Linkmann, Arjun Berera, Mairi E. McKay, Julia Jäger*
16:15	A Dynamic Subfilter-scale Stress Model for Large Eddy Simulations Based on Physical Flow Scales *Amirreza Rouhi, Ugo Piomelli, Bernard Geurts*	Lagrangian Raylaigh-Bénard convection *Sergio Chibbaro, Francesco Zonta*	Onset of reversal and chaos in thermally driven cavity flow *Masaki Shimizu, Kentaro Cho, Genta Kawahara*	
16:30	A Lagrangian sub-grid model for the dispersion of clouds of tracers *Federico Toschi, Irene M. Mazzitelli, Alessandra S. Lanotte*	Triangular Constellations in Flows *Michael Wilkinson, John Grant*		
16:45	Stochastic Reynolds transport theorem and generalized subgrid tensor *Valentin Resseguier, Etienne Memin, Bertrand Chapron*			

Day 4: Fri Aug 28 Morning (1)

	Room A	Room B	Room C	Room D
09:00	Invited Lecture: Prof. Marc Brachet, Title "Quantum Turbulence and the Gross-Pitaevskii Equation" Chair: Willem van de Water			
10:00	Coffee break			
	Room A	**Room B**	**Room C**	**Room D**
	Instability and Transition 7 Chair: Rene Pecnic	**Wall-bounded flows 6** Chair: Jerry Westerweel	**Geophysical and astrophysical turbulence 3** Chair: Alex Liberzon	**Multiphase and non-Newtonian flows 4** Chair: Markus Uhlmann
10:30	Roughness Induced Boundary Layer Transition in Incompressible Flow *Qingqing Ye, Ferry F.J. Schrijer, Fulvio Scarano*	Downstream Evolution of Perturbations in a Zero Pressure Gradient Turbulent Boundary Layer *Eduardo Rodriguez Lopez, Paul J. K. Bruce, Oliver R. J. Buxton*	Dual Cascades in Two-dimensional Compressible Turbulence *Alexei Kritsuk, Gregory Falkovich*	The turbulent dissipation rate from PIV measurements *Guus Bertens, Dennies van der Voort, Willem van de Water*
10:45	Zero-inertia instabilities in rheopectic fluids *Simone Boi, Andrea Mazzino, Jan Oscar Pralits*	Les of moderate reynolds number turbulent pipe flows *Cheng Chin*	Mean flow generation by Görtler Vortices in a rotating annulus with librating side walls *Abouzar Ghasemi V, Marten Klein, Uwe Harlander, Andreas Will*	Effect of viscoelasticity on the far-dissipation range of homogeneous isotropic turbulence *Minh Quan NGUYEN, Serge Simöens, Alexandre Delache, Mahmoud El Hajem, Wouter Bos, Robert Poole*
11:00	Flow instabilities and reversals in non-uniformly thermocapillary driven melt pool *Anton Kidess, Sasa Kenjeres, Chris R. Kleijn*	On resuspension of spherical particles from rough and smooth surfaces by a wall-normal vortex *Ron Shnapp, Alex Liberzon*	Entrainment of a turbulent patch in a stratified fluid *Lilly Verso, Maarten van Reeuwijk, Roi Gurka, Peter Diamessis, Alex Liberzon*	Rate of breakup of small inertial aggregates in homogeneous turbulence *Matthaus Babler, Luca Biferale, Alessandra S. Lanotte*
11:15	Dispersive to nondispersive transition in the plane wake and channel flows *Francesca De Santi, Federico Fraternale, Daniela Tordella*	Negative streamwise skin-friction in near-wall turbulence *Christoph Bruecker*	On the turbulence induced by non-breaking surface waves *Francisco OCAMPO-TORRES, Pedro Osuna, Aldo Hernandez Olivares*	Preferential concentration of particles in compressible turbulence *Qingqing Zhang, Han Liu, Zuoli Xiao*
11:30	Transient energy growth modulation by temperature dependent transport properties in a stratified plane Poiseuille flow *Enrico Rinaldi, Bendiks Jan Boersma, Rene Pecnik*	Direct numerical simulation of open-channel flow in the fully rough regime *Marco Mazzuoli, Markus Uhlmann*	Preferrential concentration of particles in protoplanetary nebula turbulence *Thomas Hartlep, Jeffrey Cuzzi*	Mechanics of dense suspensions in turbulent channel flows *Francesco Picano, Pedro Costa, Wim-Paul Breugem, Luca Brandt*
11:45	Lifetime of turbulent patch in taylor couette setup *Arjang Alidai, René Delfos*	Secondary Flows in Boundary Layers over Streamwise-aligned Wall-roughness *Christina Vanderwel, Bharathram Ganapathisubramani*	Prandtl number effects on the decaying and the forced turbulence in stratified fluids *Okino Shinya, Hanazaki Hideshi*	Influence of viscosity anisotropy on turbulence large scale statistics *Tim Grünberg, Thomas Rösgen*
12:00	Exploring the effects of a rigid body on the evolution of the rayleigh-taylor instability *Chris Brown, Stuart Dalziel*	Effects of external disturbances on turbulent boundary layers *Eda Dogan, Ronald Hanson, Bharathram Ganapathisubramani*	Turbulent flows driven by the libration of an ellipsoidal container *Benjamin Favier, Alexander Grannan, Michael Le Bars, Jonathan Aurnou*	Spinodal decomposition in the inverse cascade of two-dimensional, binary-fluid turbulence *Prasad Perlekar, Nairita Pal, Rahul Pandit*
12:15	Observation of predator-prey dynamics and the universality class in transitional pipe turbulence *Nigel Goldenfeld*	Direct numerical simulation of an equilibrium adverse pressure gradient turbulent boundary layer at the verge of separation *Vassili Kitsios, Callum Atkinson, Juan Sillero, Guillem Borrell, Ayse Gungor, Javier Jimenez, Julio Soria*	Solar wind spectral analysis in heliosheath from voyager 2 data *Federico Fraternale, Luca Gallana, Sophie Fosson, Enrico Magli, Merav Opher, John Richardson, Michele Iovieno, Daniela Tordella*	Turbulence modulation in particle laden pipe flow: exact regularized point particle method *Francesco Battista, Roberta Messina, Paolo Gualtieri, Carlo Massimo Casciola*
12:30	Lunch break			
13:30	Invited Lecture: Prof. Bernhard Mehlig, "Statistical Models for Turbulent Aerosols" Chair: Eberhard Bodenschatz			
14:15-14:30	Closing and Young Scientist Award			

Day 4: Fri Aug 28 Morning (2)

09:00		**Invited Lecture: Prof. Marc Brachet, Title "Quantum Turbulence and the Gross-Pitaevskii Equation"** Chair: Willem van de Water		
10:00	**Coffee break**			
	Room E	**Room F**	**Room G**	**Room M**
	Large Eddy Simulation 3 Chair: Geert Brethouwer	**Lagrangian aspects of turbulence 4** Chair: Cedric Beaume	**Acoustics 1** Chair: Christian Poelma	**Transport and mixing 2** Chair: Nicholas Ouellette
10:30	A lattice model for the eulerian description of heavy particles suspensions in one and two dimensions François Laenen, Jérémie Bec, Giorgio Krstulovic	Effect of gravity on clustering patterns and inertial particles attractors Franck Nicolleau, Andrzej Nowakowski	Uncertainty of noise prediction in case of flow over a over a forward-facing step Alexander Kolb, Michael Gruenewald, Michael Manhart	Stratified external mixing at moderate Richardson number. Jason Olsthoorn, Stuart B. Dalziel
10:45	Analysis of the yaglom equation and subgrid modelling approaches for thermally driven turbulence Andrea Cimarelli, Riccardo Togni, Elisabetta De Angelis	Finite time lyapunov exponents and extreme concentration fluctuations in 2d turbulence Hua Xia, Nicolas Francois, Horst Punzmann, Kamil Szewc, Michael Shats	Interaction between the shear layer, shock-wave and vortex ring in a starting free jet injecting into a plenum Juan Jose Pena Fernandez, Jörn Sesterhenn	Assessment of Models for Near Wall Behavior and Swirling Flows in Nuclear Reactor Sub-system Simulations Thomas M. Smith, Mark A. Christon, Emilio Baglietto, Hong Luo
11:00	Odtles: a multi-scale ansatz for highly turbulent flows Christoph Glawe, Heiko Schmidt, Alan R. Kerstein	Lagrangian analysis of turbulent rotating convection Hadi Rajaei, Rudie Kunnen, Herman Clercx	Towards Overset LES for Aeroacoustic Source Prediction Paul Bernicke, Rinie Akkermans, Roland Ewert, Nadine Buchmann, Juergen Dierke	Inertial particles do not always concentrate on a wall in turbulence Gregory Falkovich
11:15	Large-eddy simulation of turbulent channel flow using the explicit algebraic subgrid-scale model Matteo Montecchia, Amin Rasam, Geert Brethouwer, Arne Viktor Johansson	Braid Entropy of Faraday Waves driven 2D Turbulence Nicolas FRANCOIS, Hua Xia, Horst Punzmann, Michael Shats	Reliable methods for predicting the sound from clustered rocket engines Gregory A. Mack, Charles E. Tinney, Joseph H. Ruf	Turbulence-generated vortices in fluid layers Gregory Falkovich
11:30	Stochastic Subgrid Acceleration Model for inertial particles in LES of a high Reynolds number flow Mikhael Gorokhovski, Remi Zamansky	Lagrangian and eulerian rotating turbulence Luca Biferale, Irene Mazzitelli, Fabio Bonaccorso, Michel A.T.V Hinsberg, Alessandra S. Lanotte, Stefano Musacchio, Prasad Perlekar, Federico Toschi	Direct numerical simulation of the flow in a flue pipe Albert J. Baars	Role of the strain-rate tensor in turbulent scalar-transport modeling Siddhartha Verma, Guillaume Blanquart
11:45	A priori and a posteriori analysis of the hybrid two-level large-eddy simulation method for high Reynolds number complex flows Suresh Menon, Reetesh Ranjan	Clustering of chiral particles in flows with broken parity invariance Kristian Gustavsson, Luca Biferale		Direct numerical simulation of dynamic rotating jets Koichi Tsujimoto
12:00	Building proper invariants for subgrid-scale eddy-viscosity models F.Xavier Trias, David Folch, Andrey Gorobets, Assensi Oliva	Multiscale Statistics of Lagrangian and Eulerian Acceleration in Turbulent Stratified Shear Flows Frank Jacobitz, Kai Schneider, Marie Farge		
12:15	Autonomic Subgrid-Scale Closure for Large Eddy Simulations Ryan King, Peter Hamlington, Werner Dahm	Sweeping has no effect on renormalized turbulent viscosity Mahendra K. Verma, Abhishek Kumar		
12:30	**Lunch break**			
13:30	**Invited Lecture: Prof. Bernhard Mehlig, "Statistical Models for Turbulent Aerosols"** Chair: Eberhard Bodenschatz			
14:15-14:30	**Closing and Young Scientist Award**			

Prof. Steve Tobias
Applied Mathematics
University of Leeds, United Kingdom

"Direct Statistical Simulation of Turbulent Astrophysical Flows"

Flows in astrophysics are often turbulent owing to the extreme values of the Reynolds numbers. A description of these flows via direct numerical simulation (DNS) would therefore have to be able to resolve a huge range of spatial and temporal scales, which is clearly beyond the capability of current algorithms and computational resources (and indeed those of the immediate future). How- ever astrophysical objects often display remarkable organisation so that non-trivial mean flows and mean magnetic fields are apparent (which is convenient since often these are all that can be observed). The jets on Jupiter, the differential rotation of the Sun and the solar activity cycle are all examples of this "order from chaos". Owing to the presence of rotation, stratification and (usually) magnetic fields, astrophysical flows (at both large and small scales) are often (if not always) inhomogeneous and anisotropic. In this talk I shall give some examples of turbulent astrophysical flows and describe a new programme, which we term Direct Statistical Simulation (DSS) that attempts to calculate directly the low-order statistics of such flows (such as mean flows and two-point correlation functions). DSS respects the inhomogeneity and anisotropy of the astrophysical systems, and is predicated on an expansion in cumulants. I shall further discuss generalisations of the quasi-linear approximation that lead to new closure schemes for astrophysical flows. Finally I shall take my life in my own hands by suggesting that some of these methods may be of interest to those studying wall-bounded shear flows.

Prof. Chao Sun
Physics of Fluids
University of Twente, The Netherlands

"High Reynolds Number Taylor-Couette Turbulence: an Experimental Investigation"

Taylor-Couette flow - the flow between two coaxially rotating cylinders - is one of the paradigmatic systems in physics of fluids (S. Grossmann, D. Lohse, and C. Sun; High Reynolds number Taylor-Couette turbulence; *Ann. Rev. Fluid Mech.*, 48, 2016; in press). In this talk, we will present an overview of our experimental results on strongly turbulent Taylor-Couette flow with independently rotating inner and outer cylinders. We will focus on the parameter dependences of the global torque and on the local flow organization, including velocity profiles and boundary layer thicknesses. Furthermore, we will discuss transitions between different turbulent flow states.

Prof. Peter G. Frick
Institute of Continuous Media Mechanics
Perm, Russia

"Cascades and Dynamo in Fully Developed MHD Turbulence"

The fully developed turbulence is an intrinsic component of any dynamo realizable in nature or laboratory. Fine properties of MHD-turbulence can strongly affect the dynamo process and the structure of large scale processes which force the small-scale turbulence affect by-turn the turbulent cascades. Two aspects of dynamo and turbulence relationship are discussed: the peculiarities of cascades in fully developed MHD turbulence characterized by high level of helicities and the mean-field effects, provided by small-scale turbulence in magnetic field generation.

Prof. Bettina Frohnapfel
Karlsruher Institut fur Technology, Germany

"Skin Friction Drag Reduction in Turbulent Flows"

Skin friction drag reduction in turbulent flows is typically motivated from the viewpoint of energy savings. The presentation discusses how drag reduction can be evaluated in terms of energy savings and provides an overview of the present state of the flow control literature in this respect. In addition, it is discussed which specific properties of internal and external flows should be considered when evaluating turbulent drag reduction.

Prof. Marc Brachet
Ecole Normale Superieure
Paris, France

Title "Quantum Turbulence and the Gross-Pitaevskii Equation"

The talk will start by a brief introduction to physical systems displaying regimes of quantum turbulence. The status of several standard models of superfluidity will then be discussed. The rest of the talk will concentrate on models based on the Gross-Pitaevskii equation (GPE).

At first sight, the GPE can only describe a vanishing-temperature dilute superfluid. We will explain how these limitations can be lifted and how finite-temperature effects can be obtained by using classical-field models such as the Galerkin-truncated GPE. The basic numerical tools needed to properly simulate the GPE and analyze the fields will be briefly reviewed.

Several recent numerical results will finally be presented to underline the richness and the scope of the physical phenomena described by the GPE.

Prof. Bernhard Mehlig
Department of Physics
University of Gothenburg, Sweden

"Statistical Models for Turbulent Aerosols"

Heavy particles suspended in an incompressible randomly mixing or turbulent flow form a 'turbulent aerosol'. When the inertia of the particles is significant then the particles respond in intricate ways to the turbulent fluctuations of the carrying fluid: in- dependent particles may cluster together and form spatial patterns even though the fluid is incompressible, and the relative speeds of nearby particles may fluctuate strongly. Both phenomena depend sensitively on the inertia of the particles, and both phenomena affect collision rates and collision outcomes, and thus the long-term fate of the turbulent aerosol. In recent years it has become clear that important aspects of the dynamics of turbulent aerosols can be understood in terms of statistical models. In this talk I describe how statistical-model calculations have led to a detailed understanding of the mechanisms that determine inertial-particle dynamics in turbulent aerosols.